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CONTENTS

Missouriensis is the official publication of the Missouri Native Plant Society. Founded in 1979 as a non-profit corporation, the Society is devoted to the conservation and study of the plants growing wild in Missouri, to the education of the public about the significance of the native flora and its habitat, and to the publication of related information.

Looking Back -The First Ten Years
VIRGINIA K. WALLACE 36

Equisetum pratense Ehrh. (Equisetaceae), A New Species to Missouri
BRAD JACOBS 41

A New Grass For Missouri
WILLIAM W. DIERKER 44

Federally Listed Plants in Missouri: An Update
VIRGINIA K. WALLACE 45

Orchid Species New to Missouri
MARK PELTON 50

Book Review: *Wildflower Handbook*
GEORGE YATSKIEVYCH 52

Missouri Botanical Record
WALLACE R. WEBER AND CORCORAN 54

LOOKING BACK - THE FIRST TEN YEARS

Virginia K. Wallace
Missouri Department of Conservation
P. O. Box 180, Jefferson City, MO 65102

I cannot begin to address the true beginnings of the Missouri Native Plant Society (MoNPS) because I believe that the Society, or at least the climate that made the Society possible, dates back to the time of George Engelmann, long before any of us were born. A long list of botanists, amateur and professional, contributed to this climate over the years: B. F. Bush, Ernest J. Palmer, Julian Steyermark, Bill Bauer, Lou Bottenberg, Dr. Alice Nightingale, Erna Eisendrath, Edgar Denison, Art Christ, members of the Webster Groves Nature Study Society and many, many more. (There is a danger in mentioning names because someone invariably gets left out; this is by no means meant to be an all-inclusive list.)

Nor can I really address the events of recent history that led to the formation of the Society, because I wasn't here then. If John Wylie were here tonight, he would probably say that the catalyst for the formation of MoNPS was the passage of the Design for Conservation and subsequent formation of the Natural History Section with its charge to protect, among other things, the state's rare and endangered flora. I am sure those events did contribute to the society's formation. I suspect, however, that other factors also played a role, though I can only speculate what they might have been. Many of you who were involved in the process know better than I.

What I do feel qualified to talk about is the actual formation of the Society ten years ago, because that is where my experience merges with MoNPS; I started my job as botanist with the Department of Conservation just a few weeks before MoNPS' organizational meeting here in Fulton June 2, 1979.

I remember being somewhat overwhelmed at that meeting; what an assemblage of botanists for the new "state botanist" to meet all at once. I do remember being struck by the diversity of interests represented in the group that day. But we had come together united by our common concern for Missouri's native plants which is reflected in Article I of our bylaws: "The purpose of the Native Plant Society of Missouri is to promote the preservation, conservation and study of the wild plants and vegetation of Missouri, the education of the public to the value of its habitat, and the publication of related material."

That day, we heard from Dr. Robert Mohlenbrock from Southern Illinois University, who offered us some challenges. Later, in our first newsletter, our newly elected President, Jon Hawker, reflected on the nature of our fledgling organization and offered some thoughts on directions we might take. Let's look

back at their words.

Jon pointed out that because of our diversity, MoNPS had the potential for high productivity and high stability. He said we had the opportunity to begin any number of vital and long overdue activities, and that our scope should be broad to reflect the broad diversity of interests of our members and potential members. He then cautioned, however, that the very diversity that could make a strong organization, could also be our undoing, at least in the beginning. Diversity can lead to splintering into special interest groups, " each marching to its own drummer." As a result, he urged us, in our infancy, to begin with a few main goals and work together to accomplish them, thus establishing a group consciousness and a strong Society identity. Our first two tasks, he suggested, should be to develop a system for determining the status of Missouri's plants, and to educate Missourians as to the importance of knowledge about our native plants.

In his remarks, Dr. Mohlenbrock challenged us with three questions: 1) Why should one be interested in native plants?, 2) How can each of us contribute to the organization?, and 3) What can MoNPS do as an organization?. His answers, combined with Jon's suggestions for our beginnings, provide us with a way to evaluate the past ten years.

Why should we be interested in native plants? As Dr. Mohlenbrock suggested, the reasons are largely personal. Some of us are interested in them because of the possibilities they offer for gardening or landscaping, others of us may be interested in the medicinal or edible species. For many it's the excitement of discovery, either of a plant new to us or of one new to the state or county. The reasons are as diverse as our membership. One thing I have discovered is that we are not just interested in native plants, we get down right excited about them. This is no more evident than on any field trip where you can hear excited voices shouting "I found it", or "look what I found!"

It is this excitement that resulted in the formation of the Society, and that has spurred our activities over the years. Which leads to Dr. Mohlenbrock's second question of how can each of us contribute to the organization. He stressed that one need NOT be a professional botanist to contribute; individuals can contribute by exploring unknown areas, making plant lists, doing life history studies, or donating time and energy for lectures, slide shows and field trips. Our members have done all that and more. Individual members as well as chapters have explored areas, and in doing so have often found new populations of rare or unusual species. We have made plant lists and organized and participated in plant salvages.

One of our major projects, the *Missouri Botanical Record*, is an outgrowth of our first President's recommendation to develop a system for determining the status of plants in the state. By documenting new county occurrences for

all Missouri species, members are contributing a great deal to our knowledge of the flora of the state. And the ultimate publication of an *Atlas* of the *Flora of Missouri*, updating the county distribution maps found in Steyermark's *Flora* and including species found since his book was published, will be a major contribution of the Society to the field of botany.

Jon Hawker also stressed educating the public to the values of our native plants. And Dr. Mohlenbrock emphasized education and communication in answer to his third question, "What can MoNPS do as an organization." I believe we have accomplished a great deal in both education and communication. We distribute two publications to our members: our journal, *Missouriensis*, and *The Petal Pusher* newsletter. Members and others have published a wide variety of articles in these publications on such wide-ranging topics as rare plants, introduced plants, glades, new state records, field trip summaries, plant lists, and many more. These publications also document the life of the society; all of our Board meeting minutes are contained within their pages.

We have learned about new places and plants by taking field trips as Chapters, in conjunction with state Board meetings, or as individuals. We have been to every corner of the state, from Big Oak Tree State Park in the bootheel (I think it snowed that day), to the loess hill prairies in Atchison County, from Steyermark Woods in Hannibal to Diamond Grove Prairie near Joplin. Each trip is a learning experience and you can always hear the excitement of finding something new "--I found it!"

We have expanded our knowledge through many programs and workshops over the years. As I reviewed the list of these I was astounded by their number and diversity. At statewide meetings we have had programs on topics such as chert glades, rare plants, Missouri's flora, wildflower photography, and commercial trade of native plants. Workshop topics have included plant collecting, poisonous and edible plants, and a lot on identification of things: ferns, winter trees, grasses and sedges and composits. The many Chapter programs and workshops further extend our educational experiences.

In the past few years the Missouri Native Plant Society has moved out of infancy and into adolescence. We have grown and expanded our efforts with the formation of six Chapters around the state: St. Louis, Kansas City, Kirksville, Springfield, Jefferson City and Columbia. (I find it interesting that our first Chapter, the Southern Illinois Chapter, became the nucleus of an Illinois Native Plant Society.) Chapters hold regular meetings, invite speakers on a variety of plant related subjects, conduct workshops, and lead field trips, all reaching people who might not otherwise attend state-sponsored functions. Not only do Chapters provide us with more contact with the public, they also provide important contact for MoNPS members.

In order to encourage and recognize members who are active in working toward the Society's goals of conservation, education and research, MoNPS instituted an awards system. Three of these awards, the Erna R. Eisendrath Education Award, the MoNPS Stewardship Award and the MoNPS Research Award, have been given annually since 1985. The Society's highest award, the Julian Steyermark Award, is reserved for those making outstanding contributions to Missouri botany, and has been given only twice so far.

The past ten years have not been without controversy. From the very beginning, because of the diverse interests of our members, there has been conflict. Scientific collecting is important to document plant occurrences, but some are concerned that over collecting has led to the decline of some species. Propagation is an important way to preserve native plants, but planting them back into the wild can disrupt ecosystems. It has sometimes been difficult to maintain a balance between the interests of our amateur members and members who are professional botanists, or to make sure that members of each region of the state are adequately represented on the Board. As we grow and mature, some of these conflicts move toward resolution; others, however, remain as much in conflict now as they did nine or ten years ago.

I believe there is room for conflict; it keeps us from becoming complacent. It is important for us to agree to disagree, for in the end we are united by our common concern for the conservation and preservation of Missouri's flora.

We have accomplished a great deal in the past ten years, but there remains much for us to do. We could be working with schools to teach the young people of our state the values of native plants. We could develop a speakers bureau to provide talks on all aspects of native plants to civic organizations, youth groups, women's clubs and many other organizations. We could contribute to the preservation of the state's rare and endangered species, either through active efforts such as propagation or through donations to organizations such as the Center for Plant Conservation. Each of us can continue to learn and share our knowledge, and the appreciation that knowledge brings, with others. The list is limited only by our own interests and visions.

The Missouri Native Plant Society is a volunteer organization. All that we have accomplished has been through the dedication and hard work of our members. If we are to continue to grow and expand our horizons, each of us must continue to contribute in whatever way we can.

In addition to preservation, education and research, our brochure lists a fourth purpose of the Society: *enjoyment*. "Coming together to communicate with and learn from each other against the background of the Missouri wilderness promotes lasting friendships...Join in our purpose and share our enthusiasm for Missouri's floral wonders." As a botanist new to the state and unfamiliar with the

flora, I have learned a great deal from the people in this organization over the past ten years. I have also made many friends. I have enjoyed working with you over the past ten years and I look forward to furthering both our causes and our relationships during the next decade.

Thank you.

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Participants of the pre-MoNPS organizational meeting held in Jefferson City, MO, in 1978.

EQUISETUM PRATENSE EHRH. (EQUISETACEAE), A NEW SPECIES TO MISSOURI

Brad Jacobs
Missouri Department of Conservation
P. O. Box 180, Jefferson City, MO 65102

On May 18, 1989, while searching for nesting marsh birds in Clark County, Missouri, I discovered a population of *Equisetum pratense* Ehrh., (Figure 1) the Meadow Horsetail, a new species to the state's flora. This Clark County site occurs about 1.5 km southeast of Wayland around a spring outlet at the base of a sandy slope above an oxbow lake. The spring outlet is a circular sandy area, seven meters in diameter and covered by *Nasturtium officinale* R. Br., Watercress. A dense band of *E. pratense*, one to three meters wide, circumscribes the spring area and extends down the spring branch for several meters. The slope around the spring is shaded by large trees throughout most of the day.

Equisetum pratense is a delicate, shade inhabitating plant with whorls of simple branches extending from the central nodes to the apex of the sterile stems. The annual stems are slender, 1-3 mm in diameter and greenish with bicolorous sheath teeth (Lellinger 1985). Several characteristics distinguish this species from the more sun-tolerant, weedy *E. arvense* or Field Horsetail. The fertile stems of *E. pratense* develop branches after sporogenesis occurs and resemble flat-topped sterile stems, while the fertile stems of *E. arvense* wither (Cobb 1956). The sterile branches *E. pratense* are slightly rough and spreading; those of *E. arvense* are rough and usually ascending (Lellinger l.c.). The teeth of the branch sheaths of *E. pratense* are as wide as they are long, whereas those of *E. arvense* are much longer than wide (Lellinger l.c.). The first internode of the branching part of the stem is slightly shorter than the second internode in *E. pratense* and regularly equal in *E. arvense* (Cobb l.c.)

E. pratense is a boreal species with a North American range extending from Alaska to New Brunswick south to New Jersey, Iowa, South Dakota and British Columbia (Lellinger l.c.). Peck (1982) documents a Muscatine County, Iowa, population as the most southerly in the Midwest, about 80 km south of the normal range. The Clark County, Missouri, population is about 125 km south of the Muscatine population.

A voucher specimen collected on May 18, 1989 is deposited at the Herbarium of the Missouri Botanical Garden (MO).

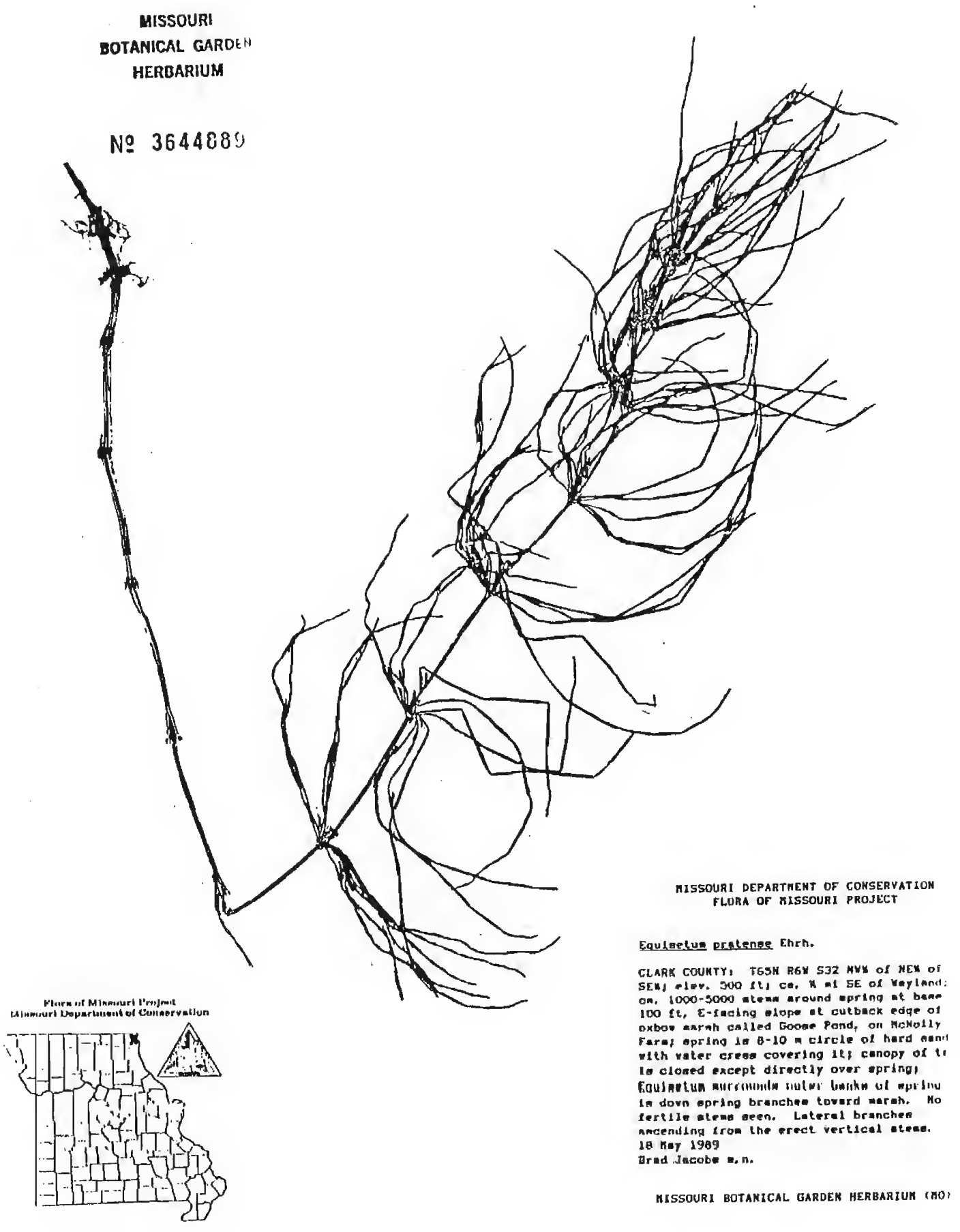
MISSOURI
BOTANICAL GARDEN
HERBARIUM
№ 3644889
MISSOURI DEPARTMENT OF CONSERVATION
FLORA OF MISSOURI PROJECT
Equisetum pratense Ehrh.
CLARK COUNTY: T65N R6W S32 NW¼ of NE¼ of SE¼; elev. 900 ft; ca. ¼ mi SE of Wayland; on. 1000-5000 stems around spring at base 100 ft, E-facing slope at cutback edge of oxbow marsh called Goose Pond, on McNeily Farm; spring is 8-10 m circle of hard sand with water cress covering it; canopy of t is closed except directly over spring; Equisetum surrounds outer banks of spring in down spring branches toward marsh. No fertile stems seen. Lateral branches ascending from the erect vertical stems.
18 May 1989
Brad Jacobs s.n.
MISSOURI BOTANICAL GARDEN HERBARIUM (MO)
Flora of Missouri Project
Missouri Department of Conservation

Figure 1. Xerograph of the voucher specimen of *Equisetum pratense* deposited at the Missouri Botanical Garden (MO).

LITERATURE CITED

Cobb, B. 1956. *A field guide to the ferns.* The Riverside Press. Cambridge, MA. pp. 281.

Lellinger, D. B. 1985. *A field manual of the ferns and fern-Allies of the United States and Canada.* Smithsonian Institution Press. Washington, D.C. pp. 389.

Peck, J. H. 1982. *Ferns and fern allies of the driftless area of Illinois, Iowa, Minnesota and Wisconsin.* Milwaukee Public Mus. Contr. Biol. Geol. 53: 1-140.

A NEW GRASS FOR MISSOURI

William W. Dierker
Extension Associate - IPM, University of Missouri Extension (Ret.)
Room 45 Agriculture Building, Columbia, MO 65211

A grass new to Missouri, *Eriochloa villosa* (Thunb.) Kunth, was collected July 26, 1987, by Edward Bullard in field of grain sorghum in Audrain County. The plants were small seedlings and were identified by Dr. C. L. Kucera only after being grown to maturity in a flower bed. One specimen, *159030* is deposited in the herbarium of the University of Missouri at Columbia (UMO); a second specinen, *01802*, is deposited in the UMO/IPM branch herbarium on the University of Missouri Columbia campus.

The inflorescence of *Eriochloa villosa* resembles that of some paspalums, especially *Paspalum pubiflorum*. Spikelets consist of one perfect floret, and one sterile or staminate floret. Spiketlets are 4-5 mm long, 2-3 mm broad and ovate in outline. Each spiketlet is subtended by a cup or cushion-like swelling at its base. The pedicels and rachis are villous. The entire plant is more or less covered with a velvety pubescence.

This grass, commonly called the Wooly Cupgrass, has a limited distribution in the United States. It is a native annual grass of the Far East including Japan, China, Taiwan, and eastern USSR. Mohlenbrock (1972) cites two locations for it in two northeastern counties of Illinois. A specimen from Wisconsin is present in the UMO herbarium. It is apparently also found in Iowa. Mohlenbrock (l.c.) indicates that it is adventive or introduced in Colorado and Oregon. This grass is of concern to the agricultural community because of its association with grain crops. It will undoubtedly be found in additional locations in northern and central Missouri, probably in association with grain crops.

LITERATURE CITED

Mohlenbrock, R. H. 1972. *The Illustrated Flora of Illinois: Grasses* Bromus *to* Paspalum. Southern Illinois University Press. Carbondale.

FEDERALLY LISTED PLANTS IN MISSOURI AN UPDATE

Virginia K. Wallace
Missouri Department of Conservation
P.O. Box 180, Jefferson City, MO 65102

In 1984, Sherry Morgan, then a botanist for the Missouri Department of conservation (MDC), wrote an article for *Missouriensis* entitled *Making a List and Checking it Twice* [Vol. 5(3)]. The subject of the article was Missouri plants proposed for federal listing by the U.S. Fish and Wildlife Service (USFWS). At the time the article was written, only one Missouri species was listed: *Isotria medeoloides* (Pursh) Raf., the Small Whorled Pogonia.

Now nine species occurring in Missouri are on the federal list of threatened or endangered species. The Missouri Department of Conservation is charged with conserving these species. Below is a brief description of protection activities undertaken for each species in recent years.

Isotria medeoloides (Pursh) Raf.
Small Whorled Pogonia

The Small Whorled Pogonia orchid became the first plant occurring in Missouri added to the endangered species list when it was listed as endangered in the *Federal Register* on September 10, 1982 (47 *Federal Register* 39827). This small orchid, which blooms in May, is known only from an 1897 collection made by Colton Russell near Glen Allen in Bollinger County (Steyermark, 1963). Despite repeated searches by Julian Steyermark and other botanists, including many MoNPS members, this species has not been found again. It does, however, remain extant in several eastern states and in Canada.

Lindera melissifolium (Walt.) Blume
Pondberry

Julian Steyermark in his *Flora of Missouri* (1963) described Pondberry as one of the rarest shrubs in the United States. He found the single Missouri population growing in swampy, forested depressions on a farm in Ripley County in October 1948. He visited the site again in late March of 1949 when the plants were in bloom, but the population was "lost" until it was rediscovered by a botanist from Arkansas in 1979. That farm was purchased by the Department of Conservation in 1980 to protect a portion of the Pondberry population. The remainder of the population was purchased in 1984 by The Nature Conservancy, and later transferred to MDC as the Nancy B. Altvater Pondberry Preserve addition to Sand Ponds Natural History Area.

Pondberry is at the northwestern edge of its range in Missouri. When it was listed on July 31, 1986, nineteen populations were known from Arkansas (9), Georgia (2), Mississippi (2), Missouri (1), North Carolina (1) and South Carolina (4) (51 *Federal Register* 27497). Six additional populations have been found since its listing in Arkansas (3) and Mississippi (3).

Lesquerella filiformis Rollins
Missouri Bladderpod

Missouri Bladderpod is a member of the mustard family that occurs only in Missouri on limestone glades in Greene, Dade, Lawrence and Christian counties. It is a winter annual, forming a basal rosette of leaves in the fall and blooming in April and early May. It was listed as endangered by the USFWS on January 8, 1987. Nine populations were known when the species was listed (52 *Federal Register* 879). MDC biologists conducted surveys for this plant in all available habitat in the historic counties of occurrence during 1988 and 1989, with funding from USFWS. Approximately 55 new sites have been located during these surveys in Greene, Dade, Lawrence and Christian counties and all are restricted to the fossiliferous layers of Burlington Keokuk and Warsaw limestone outcrops.

MDC purchased 25 acres in Greene County in 1988 to protect a population of Missouri Bladderpod. The Nature Conservancy has also purchased land to protect this species, and several populations occur at Wilson's Creek National battlefield.

Trifolium stoloniferum Eat.
Running Buffalo Clover

Running Buffalo Clover was once abundant in the Ohio River Valley and was known from Illinois, Indiana, Kansas, Kentucky, Missouri, Ohio and West Virginia (52 *Federal Register* 21478). Only one extant population was known at the time of listing (in West Virginia), although additional populations have since been located in Ohio, Kentucky and Indiana.

Running Buffalo Clover was known from Wayne, Jasper, St. Louis and Boone Counties in Missouri (Steyermark, 1963) but all records are very old. In 1988, MDC biologists conducted a search of all historical localities as well as appropriate habitat in counties along the Missouri and Mississippi rivers. The search was conducted from May through August, the reported blooming time for the species in Missouri. No populations were found during the search, but this species may still occur in the state.

Geocarpon minimum Mackenzie
Geocarpon

Geocarpon is known only from Missouri and Arkansas and was listed as Threatened by the USFWS on June 16, 1987 (52 *Federal Register* 22930). In Missouri, it occupies Channel sandstone glades and behaves as a winter annual, forming a basal rosette in the fall and blooming in March or April. In Arkansas it is a strict annual and occurs on barren areas with high magnesium soils. Geocarpon is currently known from five sites in Arkansas and 22 sites in Missouri. Seven of the Missouri sites were found in Dade and Cedar counties during a 1989 MDC survey of potential habitat. Geocarpon also occurs in Greene, Lawrence and Polk Counties.

Asclepias meadii Torr.
Mead's Milkweed

Once ranging across the tallgrass prairie region, Mead's Milkweed is now known only from Iowa, Illinois, Kansas and Missouri. While Kansas and Missouri have numerous populations, Iowa has only two remaining sites and Illinois only four (53 *Federal Register* 33982). As a result, Mead's Milkweed was listed as threatened on September 1, 1988.

MDC biologists conducted a survey of prairies in Pettis and Benton counties in 989 to locate additional Mead's Milkweed populations (25 sites were previously known). Though Mead's Milkweed blooms in early June and is difficult to locate in a vegetative state, the search was conducted in June and July. Fortunately, the search was successful (although few flowering or fruiting plants were found); ten new populations were found in Benton County and seven were located in Pettis County.

A Recovery Team, consisting of representatives from Illinois, Missouri and Kansas, was formed by the USFWS this year to plan recovery efforts for this species.

Boltonia decurrens (Torr. & Gray) Wood
Decurrent False Aster

Decurrent False Aster is a perennial plant of open wetlands along the Illinois River in Illinois and St. Charles County in Missouri. It was listed as threatened on November 11, 1988 (53 *Federal Register* 45858). Reported by Steyermark (1963) (as *B. asteroides* var. *decurrens*) from Lincoln, St. Charles and St. Louis Counties, it was considered extirpated from the state until botanists from the Missouri Botanical Garden discovered a population in bloom near West Alton in St. Charles County In August, 1987. (MoNPS members helped transplant a portion of that population to another known site in October, 1987). MDC bota-

nists conducted a search for the species in Lincoln, St. Louis, St. Charles and Pike Counties in 1988. Of 227 sites searched, only 10 additional sites were found, all in St. Charles County and all in close proximity to the known populations.

The USFWS formed a Recovery Team for this species this year with representatives from Illinois and Missouri.

Platanthera leucophaea (Nutt.) Lindl.
Platanthera praeclara Sheviak & Bowles
Eastern and Western Prairie Fringed Orchids

These two species have been proposed for federal listing as threatened, with the final rule expected to be published October 30, 1989. Both occurred in Missouri at one time and are treated in the Flora of Missouri (Steyermark, (1963) as *Habenaria leucophaea*. They were separated by Bowles and Sheviak 1986) based on pollination mechanisms, morphology and geographic distributions. According to Summers (1987), *P. leucophaea* was found in the eastern counties of Missouri, while *P. praeclara* is restricted to western Counties. The Eastern Prairie Fringed Orchid is considered extirpated from Missouri, though it is known from 51 sites in seven States and two Canadian Provinces (53 *Federal Register* 39621). The Western species does occur at two sites (in Holt and Atchison Counties) in Missouri, as well as at about 40 sites in six other states and one Canadian Province. Tarklo Prairie Natural History Area was purchased by MDC in 1985 to protect one of the Missouri populations.

MDC botanists conducted a survey for the Western Prairie Fringed Orchid in June, 1989, when plants should have been in flower and relatively easy to spot. No populations were found. However, the early spring drought affected flowering of this species--plants at known sites did not bloom this year. Suitable habitat occurs in Missouri and the plant may still be found.

While we know much about these species in Missouri, there is still much we do not know. We will continue to conduct surveys for many of these plants in future years. We will also initiate research to answer other questions about their survival. The goal for all listed species is to secure and manage enough populations that the species are no longer in danger of extinction.

As MoNPS members, you can help by continuing to keep your eyes open for these plants. Many of the known populations of these species were discovered by MoNPS members. More importantly, you have reported those populations to MDC so that we can help ensure their protection. If you do find a population of the above species, or any other rare plant, please report it to the Heritage Botanist, Missouri Department of Conservation, P. O. Box 180, Jefferson City, MO 65102.

SUMMARY OF FEDERALLY LISTED SPECIES

SPECIES	COMMON NAME	STATUS	DATE LISTED
Isotria medeoloides	Small Whorled Pogonia	E	9/10/82
Lindera melissifolium	Pondberry	E	7/31/86
Lesquerella filiformis	Missouri Bladderpod	E	1/08/87
Trifolium stoloniferum	Running Buffalo Clover	E	6/05/87
Geocarpon minimum	Geocarpon	T	6/16/87
Asclepias meadii	Mead's Milkweed	T	9/01/88
Boltonia decurrens	Decurrent False Aster	T	11/14/88
Platanthera leucophaea	Eastern Prairie Fringed Orchid	T	10/30/89
Platanthera praeclara	Western Prairie Fringed Orchid	T	10/30/89

LITERATURE CITED

Sheviak, C. J. and M. L. Bowles. 1986. The prairie fringed orchids: A pollinator) isolated species pair. Rhodora 88: 267-290.

Steyermark, J. A. 1963. *Flora of Missouri.* Iowa State University Press, Ames. lxxxiii + 1728 pp.

Summers, B. 1987. *Missouri Orchids*, revised ed. Missouri Department of Conservation, Jefferson City. ix + 92 pp.

ORCHID SPECIES NEW TO MISSOURI

Mark Pelton
Missouri Department of Conservation
P. O. Box 631, Poplar Bluff, MO 63901

Although Carlisle Luer, in his book *The Native Orchids of the United States and Canada*" (1975), mapped the Cranefly Orchid, *Tipularia discolor* (Pursh) Nutt., as occurring in extreme southeast Missouri, no voucher specimens have ever been found to verify its occurrence in this region. George Yatskievych considers this listing by Luer an error (Personal communication).

I had been advised by Don Kurz, Missouri Department of Conservation, that the Cranefly Orchid occurred on a site in Clay County, Arkansas, adjacent to Sand Ponds Natural History Area (Missouri Department of Conservation) in Ripley County, Missouri, and that its occurrence in nearby Missouri was a good possibility. On November 11, 1988, I found a small population of *Tipularia discolor* on Corkwoods Natural History Area (Missouri Department of Conservation), one mile west of Neelyville, Missouri and four miles north of Arkansas.

Corkwood Natural History Area is located at the western edge of the Bootheel Region. Part of area contains several large, rounded, sand dunes (approximately 50 feet in diameter) that rise 3-4 feet above the surrounding lowland forest. Cherrybark Oak ,*Quercus falcata* var. *pagodaefolia* Ell., White Oak, *Quercus alba* L., Sassafras, *Sassafras albidun* (Nutt.) Nees., Black Cherry, *Prunus serotina* Ehrh., and Devils-walking Stick, *Aralia spinosa* L., are some of the dominant plants on the tops of these dunes. The surrounding bottomland forest includes Willow Oak, *Quercus phellos* L., Pin Oak, *Quercus palustris* Muenchh., Green Ash, *Fraxinus pennsylvanica* Marsh., and American Elm, *Ulmus americana* L.). The Tipularia population (six plants seen) occurs on the top of one of these dunes in association with *Sassafras albidum, Asimina triloba* (L.) Dunal, *Quercus michauxii* Nutt., *Podophyllum peltatum* L., *Parthenocissus quinquefolia* (L.) Planch., *Aralia spinosa*, and *Brunnichia cirrhosa* Gaertn.

Luer (1975) describes the flowering stem of *Tipularia* as "amazingly difficult to see" because their tiny, purplish green blossoms blend into the forest floor background. The loose raceme of 20-40 small blossoms occupy about two-thirds of the slender scape. The plants have a series of underground oval tubers that produce alternately a solitary leaf and the inflorescence.

In the fall, a single leaf appears on the ground and lasts through the winter until about mid-May, when it withers and disappears. The upper surface of the leaf is dark green; the under surface is a satiny purple. Shortly before the leaf withers in the spring, it turns a

dull red color.

Not all plants will produce a flowering stem. Where hundreds of the leaves can be seen in the winter only a few flowering stems may be seen the following summer (Figure 1).

Tipularia discolor occurs from southern New York to southern Indiana and southeastern Missouri and south through Louisiana and Northern Florida.

Photographs of these plants, substituting for voucher specimens, have been deposited in the herbarium of the Missouri Botanical Garden.

LITERATURE CITED

Luer, C.A. 1975. *The Native Orchids of the United States and Canada.* The New York Botanical Garden, W. S. Cowell Ltd. Ipswich.

Figure 1. Leaves of *Tipularia discolor*.

Wildflower Handbook. edited by Annie Paulson, copyright 1989, Texas Monthly Press, Austin, TX, 337 pp., paperbound (ISBN O-87719-167-0), $9.95.

The Texas Wildflower Research Center should be well known to MONPS members and shares many of our society's goals. In the past few years the Texas Center has expanded its research and interpretive programs, and the Wildflower Handbook is one of the most ambitious projects it has undertaken to promote wildflowers. And what a handbook it is! This attractive volume contains contributions by staff members at the Center, as well as the efforts of volunteers and two nonstaff contributors. The book takes two approaches to informing the reader about planting and maintaining wildflowers. The first is to provide basic information on the "how to" aspects of planting and maintaining everything from a garden to a meadow. Of particular interest to MONPS members may be chapters on recreating a prairie and roadside plantings. Other chapters contain useful, practical information on buying bulk seed, propagating plants from seed, and establishing a buffalo grass lawn (such as the one at the Missouri Department of Conservation Headquarters in Jefferson City). Although there is a chapter on collecting wildflower seeds in the field, there is a strong plant conservation message throughout the text.

Many readers, including MONPS members, may already know the basics of many of the topics included in the "how to" parts of the Wildflower Handbook and the editor and contributors apparently understand that they are serving an audience of mixed backgrounds. The second approach to promoting wildflowers included in the book is to provide readers with technical information on various other, available resources. For example, the book discusses commercially available wildflower seed mixes and includes a lengthy table with information on the names, native distributions, and habitat requirements of most of the plants commonly included in such mixes, including identification of nonnative species in some mixes. The table also contains practical information on number of seeds per pound and suggested seeding density for each species. Including this table, the text part of the book occupies only the first 88 pages. The rest of the book contains extensive bibliographies on wildflowers of different parts of the United states and two lengthy appendices.

The first appendix contains the names, addresses, and telephone numbers of various organizations in each state that can provide further information on wildflowers. For Missouri there are eight entries, including our own Missouri Native Plant Society. The entries include brief descriptions of each organization's scope, purpose, research programs, publications, and programs. This appendix should prove very useful to anyone planning to travel to other states and wanting information on the native plants there.

The second appendix, also sorted by state, is a list of commercial

sources for wildflower seed and native plants. For each seller, information is included on the type of business, scope, propagation methods used, primary plant types for sale (trees, shrubs, grasses, wildflowers), and an indication of the percentage of that seller's business that concerns native species. There are three listings for Missouri and several others for surrounding states.

Whether you want to establish a wildflower meadow, establish a prairie, learn about roadside plantings, or simply want to have the wealth of names and references at hand (which is what first caught my eye), there is something in the Wildflower Handbook for every lover of native plants. The Texas Wildflower Research Center should be congratulated for having assembled this useful and interesting body of information, and Texas Monthly Press should be thanked for putting together such an attractive, easily read, and inexpensive book. Hopefully, this publication will stimulate readers to submit further information on the wildflower resources of each state, so that future editions will be even more comprehensive. *G. Yatskievych, Flora of Missouri Project.*

Jon Paul Rebman has recently completed his Master's Thesis at Southwest Missouri State University. It's title is *The Vascular Flora of Piney Creek Wilderness, Barry/Stone Counties, Missouri.*

MISSOURI BOTANICAL RECORD 11

Wallace R. Weber, Department of Biology
William Corcoran, Department of Geosciences,
Southwest Missouri State University
Springfield, MO 65804-0095

The *Missouri Botanical Record* is the official register for new county records of all vascular plant taxa in Missouri. To qualify for inclusion in this record, a voucher specimen of the record taxon must be deposited in a recognized herbarium and verified by the curator. Following the format used below, please submit all records to Dr. Wallace R. Weber, Department of Biology, Southwest Missouri State University, Springfield, MO 65804-0095.

In the *Flora of Missouri*, Steyermark used only a single map number to refer to each species, even though several subspecific taxa were listed. In these instances, various symbols were used to represent each taxon on a single Missouri map with counties. In the *Missouri Botanical Record* a decimal system is used, with .1 assigned to the second taxon listed by Steyermark under each map, .2 for the third, and so on. Point (.99) is used to designate a species in which Steyermark included one or more subspecific taxa, but which was not specified by the collector. Point zero nine (.09) identifies a taxon not included by Steyermark. The letters "v" and "f" refer to variety and form respectively, while "nv" indicates that no subspecific category has been recognized.

Contributors for this issue include: W. C. Royal, 408 Jane Street, Fayette, MO 65248, Jay Raveill, Department of Botany, Vanderbilt University, Nashville, TN, William Dierker, Extension Associate (Retired), University Extension, 45 Agriculture Building, University of Missouri Columbia, Columbia, MO 65211, and Melvin Conrad, Science Division, Nottingham Missouri State University, Kirksville, MO 63501.

Two new herbarium designations appear in this list: UNO/IPM for the Integrated Pest Management Branch Herbarium of the Herbarium of the University of Missouri at Columbia, and REIS for the herbarium at the Reis Biological Station.

MAP #	TAXON	COUNTY	DATE	COLLECTOR	HERB
		EQUISETACEAE			
12	*Equisetum laevigatum*	Schuyler	06/08/87	*Conrad 11000*	NEMO
13.1	*Equisetum hyemale* v. *pseudohyemale*	Shannon	05/26/88	*Conrad 11773*	NEMO
		POLYPODIACEAE			
29	*Pellaea glabella* v. *glabella*	Pike	04/27/88	*Tainter 1811*	UMO/IPM
54.3	*Cystopteris fragilis* v. *fragilis* f. *simulans*	Shannon	09/17/88	*Conrad & Ross 11968*	NEMO
		NAJADACEAE			
79	*Potamogeton diversifolius*	Macon	09/10/83	*Hein 38*	NEMO
		ALISMATACEAE			
94	*Sagittaria montevidensis* ssp. *calycina*	Lewis	09/05/81	*Hopkins 105*	NEMO
	ssp. *calycina*	Sullivan	09/11/88	*Gleason 344*	NEMO
95.1	*Sagittaria rigida* f. *elliptica*	Randolph	05/28/85	*Conrad & Utterback 10226*	NEMO
		GRAMINEAE			
104	*Arundinaria gigantea*	Dallas	07/28/88	*DeBellis 1906*	UMO/IPM
106	*Bromus inermis*	Perry	07/15/88	*Stevens 1843*	UMO/IPM
110	*Bromus mollis*	Cole	06/16/84	*Raveill 2082*	MO
111	*Bromus racemosus*	Howard	06/19/85	*Royall 210*	UMO
111	*Bromus racemosus*	Saline	05/31/83	*Dierker 1220*	UMO/IPM
113	*Bromus japonicus*	Cole	06/16/85	*Raveill 2073*	MO
113	*Bromus japonicus*	Shelby	06/12/85	*Quarles 1468*	UMO/IPM
115	*Bromus sterilis*	Cole	06/16/85	*Raveill 2085*	MO
120	*Festuca elatior* v. & f. *elatior*	Cole	06/16/84	*Raveill 2066*	MO

120.1	*Festuca elatior* v. *elatior* f. *aristata*	Iron	05/23/88	*Conrad 11736*	NEMO
121	*Festuca obtusa*	Cole	06/16/84	*Raveill 2067*	MO
123.99	*Festuca rubra*	Howell	08/21/86	*Dierker 1649*	UMO/IPM
129	*Glyceria striata* v. *striata*	Cole	06/16/84	*Raveill 2055*	MO
133	*Poa compressa*	Crawford	06/03/88	*Conrad 11876*	NEMO
133	*Poa compressa*	Texas	08/02/88	*USDA,SCS 1907*	UMO/IPM
138	*Poa wolfii*	Adair	05/14/81	*Walker 96*	NEMO
138	*Poa wolfii*	Macon	05/28/83	*Hein 36*	NEMO
139	*Poa bulbosa*	Cole	04/27/84	*Raveill SN*	MO
139	*Poa bulbosa*	Newton	04/03/86	*Pherigo 1600*	UMO/IPM
144	*Eragrostis capillaris*	Cole	10/06/84	*Raveill 2182*	MO
147	*Eragrostis pectinacea*	Cole	06/09/84	*Raveill 2040*	MO
154.99	*Eragrostis spectabilis*	Howard	10/01/85	*Royall 212*	UMO
156	*Diplachne fascicularis*	Cole	08/20/84	*Raveill 2160*	MO
162	*Uniola latifolia*	Putnam	02/13/86	*Killpack 1708*	UMO/IPM
164.99	*Dactylis glomerata*	Schuyler	06/08/87	*Conrad 10988*	NEMO
166	*Phragmites communis*				
166	v. *berlandieri*	Clark	07/15/85	*Jackson 1540*	UMO/IPM
166	v. *berlandieri*	Knox	09/02/86	*Dierker 1790*	UMO/IPM
166	v. *berlandieri*	Monroe	11/04/86	*Infield 1844*	UMO/IPM
168	*Tridens flavus*	Cole	08/20/84	*Raveill 2163*	MO
171	*Tridens strictus*	Cole	10/06/84	*Raveill 2173*	MO
171	*Tridens strictus*	Oregon	08/03/87	*Jennings 1815*	UMO/IPM
171	*Tridens strictus*	Webster	10/15/87	*Ingram 1827*	UMO/IPM
174.99	*Agropyron repens*	Cape Girardeau	03/27/87	*Seabaugh 1846*	UMO/IPM
174.99	*Agropyron repens*	Howell	06/16/86	*Jennings 1834*	UMO/IPM
174.99	*Agropyron repens*	Knox	06/20/88	*Redelfs 1836*	UMO/IPM
174.99	*Agropyron repens*	Monroe	06/08/88	*Rosenkranz 1807*	UMO/IPM
174.99	*Agropyron repens*	Ralls	06/20/88	*Kennett 1835*	UMO/IPM
175	*Agropyron smithii*	Holt	07/29/83	*Dierker 1216*	UMO/IPM
178	*Aegilops cylindrica*	Clinton	05/20/88	*Schreiber 1902*	UMO/IPM
178	*Aegilops cylindrica*	Cole	06/09/84	*Raveill 2043*	MO
178	*Aegilops cylindrica*	Franklin	06/03/85	*Steffens 1455*	UMO/IPM
178	*Aegilops cylindrica*	Howell	05/18/87	*Dierker 1821*	UMO/IPM
181	*Elymus villosus*	Cole	06/16/84	*Raveill 2065*	MO
185.2	*Elymus virginicus* v. *jejunus*	Crawford	05/30/88	*Conrad 11819*	NEMO
185.99	*Elymus virginicus*	Cole	06/16/84	*Raveill 2064*	MO

188.99	*Hordeum jubatum*	Callaway	06/16/83	*Dierker 1137*	UMO/IPM
189	*Hordeum pusillum*	Cole	06/16/84	*Raveill 2054*	MO
189	*Hordeum pusillum*	Howard	05/27/85	*Royall 157*	UMO
192.99	*Lolium multiflorum*	Cole	07/09/85	*Smedley 1721*	UMO/IPM
192.99	*Lolium multiflorum*	Lewis	06/03/87	*Dierker 1818*	UMO/IPM
192.99	*Lolium multiflorum*	Webster	06/03/85	*Ingram 1456*	UMO/IPM
204	*Holcus lanatus*	Madison	06/02/85	*Zielinksi 1458*	UMO/IPM
218	*Alopecurus pratensis*	Adair	05/21/86	*Dierker 1656*	UMO/IPM
218	*Alopecurus pratensis*	Callaway	04/30/87	*Lehenbauer 1883*	UMO/IPM
218	*Alopecurus pratensis*	Johnson	06/07/88	*Bennett 1803*	UMO/IPM
218	*Alopecurus pratensis*	Vernon	05/05/87	*Wojcik 1814*	UMO/IPM
219	*Alopecurus aequalis*	Clay	06/23/85	*Raveill 2318*	MO
220	*Alopecurus carolinianus*	Butler	05/07/86	*DeFelice 1589*	UMO/IPM
220	*Alopecurus carolinianus*	Cole	06/09/84	*Raveill 2042*	MO
220	*Alopecurus carolinianus*	Knox	05/10/85	*Dierker 1503*	UMO/IPM
221	*Phleum pratense*	Cole	06/16/84	*Raveill 2060*	MO
228.1	*Muhlenbergia frondosa* f. *commutata*	Adair	09/07/80	*Walker 57A*	NEMO
231	*Muhlenbergia schreberi* v. *schreberi*	Buchanan	04/29/88	*Turner 1810*	UMO/IPM
	v. *schreberi*	Sullivan	09/12/87	*Conrad & Gronefeld 11322*	NEMO
233	*Sporobolus vaginiflorus* v. *vaginiflorus*	Cole	10/06/84	*Raveill 2183*	MO
233.1	*Sporobolus vaginiflorus* v. *inaequalis*	Adair	09/09/80	*Walker 60*	NEMO
235.99	*Sporobolus asper*	Callaway	10/19/88	*Smart 1917*	UMO/IPM
248	*Aristida oligantha*	Howard	09/21/85	*Royall 206*	UMO
252	*Aristida intermedia*	Schuyler	09/19/87	*Conrad & Millett 11372*	NEMO
255.09	*Leptochloa dubia*	Crawford	09/25/88	*Pickle 171231*	UMO/IPM
255.09	*Leptochloa dubia*	Gasconade	09/26/88	*Wright 1912*	UMO/IPM
257	*Cynodon dactylon*	Audrain	08/28/87	*Hoer 1823*	UMO/IPM
257	*Cynodon dactylon*	Callaway	10/07/85	*Brown 1791*	UMO/IPM
257	*Cynodon dactylon*	Cole	10/06/84	*Raveill 2185*	MO
262	*Chloris virgata*	Oregon	09/11/87	*Jennings 1829*	UMO/IPM
263	*Chloris verticillata*	Buchanan	08/21/87	*Burr 1824*	UMO/IPM
263	*Chloris verticillata*	Cedar	07/09/86	*Dierker 1573*	UMO/IPM
263	*Chloris verticillata*	Cole	08/20/84	*Raveill 2164*	MO
263	*Chloris verticillata*	Holt	08/27/85	*Williams 1720*	UMO/IPM
263	*Chloris verticillata*	Lawrence	07/09/86	*Dierker 1569*	UMO/IPM

263	*Chloris verticillata*	St. Francois	08/03/88	*Gamble 1910*	UMO/IPM
271	*Phalaris arundinacea*	Audrain	07/09/88	*Schnarre 1838*	UMO/IPM
271	*Phalaris arundinacea*	Callaway	07/15/88	*Zerr 1840*	UMO/IPM
271	*Phalaris arundinacea*	Cole	06/16/84	*Raveill 2056*	MO
271	*Phalaris arundinacea*	Howard	07/22/84	*Royall 123*	UMO
271	*Phalaris arundinacea*	Nodaway	06/02/86	*Wright 1764*	UMO/IPM
279	*Digitaria ischaemum* v. *ischaemum*	Schuyler	09/19/87	*Conrad & Millett 11418*	NEMO
279.99	*Digitaria ischaemum*	Howard	09/25/85	*Royall 208*	UMO
281	*Leptoloma cognatum*	Howard	09/26/82	*Royall 38*	UMO
282	*Eriochloa contracta*	Carroll	08/17/82	*Dierker 828*	UMO/IPM
282	*Eriochloa contracta*	Cole	10/06/84	*Raveill 2184*	MO
282	*Eriochloa contracta*	Osage	08/02/85	*Gentry 1623*	UMO/IPM
289	*Paspalum pubiflorum* v. *glabrum*	Cole	10/06/84	*Raveill 2178*	MO
289	v. *glabrum*	Saline	07/27/84	*Dierker 1713*	UMO/IPM
291.2	*Paspalum ciliatifolium* v. *stramineum*	Clark	07/01/87	*Conrad 11111*	NEMO
291.99	*Paspalum ciliatifolium*	Howard	09/06/85	*Royall 198*	UMO
295.99	*Paspalum floridanum*	Crawford	10/05/84	*Pickle 171230*	UMO/IPM
295.99	*Paspalum floridanum*	Dent	08/20/86	*Dierker 1776*	UMO/IPM
309	*Panicum praecocius*	Howard	06/25/83	*Royall 66*	UMO
315.2	*Panicum oligosanthes* v. *scribnerianum*	Iron	05/23/88	*Conrad 11731*	NEMO
325	*Panicum dichotomiflorum*	Schuyler	09/19/87	*Conrad & Millett 11417*	NEMO
327	*Panicum gattengeri*	Adair	10/15/82	*Walker 219*	NEMO
329	*Panicum capillare* v. *capillare*	Schuyler	09/19/87	*Conrad & Millett 11416*	NEMO
338	*Echinochola crusgalli* v. & f. *crusgalli*	Laclede	08/12/88	*Prosser & Fauche 1905*	UMO/IPM
338.99	*Echinochola crusgalli*	Cole	10/06/84	*Raveill 2188*	MO
338.99	*Echinochloa crusgalli*	Howard	08/09/83	*Royall 78*	UMO
339.1	*Echinochloa muricata* v. *ludoviciana*	Schuyler	10/05/87	*Millett 13*	NEMO
339.3	*Echinochloa muricata* v.*microstachya*	Schuyler	10/05/87	*Millett 5*	NEMO
340	*Setaria glauca*	Cole	08/20/84	*Raveill 2159*	MO
340	*Setaria glauca*	Schuyler	09/22/86	*Conrad 10759*	NEMO

341	*Setaria geniculata*	Howell	08/21/86	*Dierker 1704*	UMO/IPM
341	*Setaria geniculata*	Lawrence	09/03/87	*Slusher 1825*	UMO/IPM
341	*Setaria geniculata*	Sullivan	09/12/87	*Conrad & Gronefeld 11305*	NEMO
343.99	*Setaria viridis*	Atchison	06/27/85	*Dierker 1495*	UMO/IPM
343.99	*Setaria viridis*	Cole	08/20/84	*Raveill 2156*	MO
344	*Setaria faberi*	Cole	08/20/84	*Raveill 2157*	MO
346	*Cenchrus longispinus*	Cole	08/20/84	*Raveill 2153*	MO
355	*Andropogon virginicus*	Caldwell	05/18/88	*Motsinger 1792*	UMO/IPM
357	*Andropogon saccharoides*	Cedar	10/02/87	*West 1826*	UMO/IPM
358	*Sorghum halepense*	Cole	08/20/84	*Raveill 2150*	MO
362	*Tripsacum dactyloides*	Moniteau	07/31/87	*Yocky 1820*	UMO/IPM
362	*Tripsacum dactyloides*	Scott	08/06/86	*Garrett 173546*	UMO/IPM

CYPERACEAE

378	*Cyperus esculentus* v. & f. *esculentus*	Schuyler	10/05/87	*Millett 29*	NEMO
378.99	*Cyperus esculentus*	Bates	06/07/83	*Dierker 1098*	UMO/IPM
387	*Cyperus ovularis* v. *ovularis*	Monroe	07/14/84	*Raveill 2113*	DNR
387.1	v. *sphaericus*	Carroll	07/29/86	*Dierker 1563*	UMO/IPM
413	*Scirpus americanus* v. *americanus*	Crawford	06/02/88	*Conrad & Aspinwall 11865*	NEMO
415	*Scirpus validus* v. *creber*	Cole	06/16/84	*Raveill 2086*	MO
	Scirpus atrovirens				
421.2	v. *georgianus*	Audrain	07/12/84	*Dierker 1270*	UMO/IPM
	v. *georgianus*	Vernon	06/11/84	*Bruffy 1333*	UMO/IPM
421.99	*Scirpus atrovirens*	Cole	06/16/84	*Raveill 2057*	MO
424	*Scirpus lineatus*	Cole	06/16/84	*Raveill 2076*	MO
450	*Carex leavenworthii*	Crawford	05/30/88	*Conrad 11821*	NEMO
	Carex muhlenbergii				
452.1	v. *enervis*	Crawford	06/01/88	*Conrad 11850*	NEMO
452.2	v. *australis*	Saline	05/30/84	*Dierker 1410*	UMO/IPM
464	*Carex conjuncta*	Crawford	05/30/88	*Conrad 11842*	NEMO
475	*Carex suberecta*	Iron	05/23/88	*Conrad 11743*	NEMO
476	*Carex brevior*	Adair	06/17/82	*Welton*	NEMO
500	*Carex blanda*	Crawford	05/30/88	*Conrad 11822*	NEMO

LEMNACEAE

564	*Wolffia papulifera*	Vernon	07/15/88	*Thompson 1841*	UMO/IPM

COMMELINACEAE

575	*Commelina communis*	Jefferson	09/23/85	*Noce 1629*	UMO/IPM

JUNCACEAE

590	*Juncus tenuis* f. *tenuis*	Monroe	07/14/84	*Raveill 2126*	DNR
591	*Juncus interior*	Ralls	06/16/83	*Dierker 1123*	UMO/IPM
593.99	*Juncus marginatus*	Cole	06/16/84	*Raveill 2070*	MO
599	*Juncus brachycarpus*	Monroe	07/14/84	*Raveill 2130*	DNR

LILIACEAE

618.99	*Allium vineale*	Clark	07/01/83	*Walker 472*	NEMO
630	*Erythronium albidum* v. *albidum*	Knox	04/17/88	*Gleason 14*	NEMO
630.1	v. *mesochoreum*	Macon	04/19/83	*Hein 30*	NEMO
630.99	*Erythronium albidum*	Howard	04/04/85	*Royall 146*	UMO
631.99	*Camassia scillioides*	Vernon	05/04/82	*Dierker 959*	UMO/IPM
634	*Ornithogalum umbellatum*	Lafayette	04/10/86	*Knight 1598*	UMO/IPM
634	*Ornithogalum umbellatum*	Ray	04/08/86	*Ratcliffe 1599*	UMO/IPM
642	*Polygonatum biflorum* f. *biflorum*	Randolph	05/19/81	*Conrad 9053*	NEMO
642	f. *biflorum*	Shannon	05/26/88	*Conrad 11754*	NEMO
642	f. *biflorum*	Sullivan	05/25/83	*Broyles*	NEMO

SALICACEAE

716.99	*Salix caroliniana*	Schuyler	08/22/86	*Conrad 10790*	NEMO
725	*Salix humilis* v. *humilis*	Schuyler	09/19/87	*Conrad & Millett 11410*	NEMO

JUGLANDACEAE

741	*Carya illinoensis*	Schuyler	08/22/86	*Conrad 10779*	NEMO

747	*Carya tomentosa* v.& f. *tomentosa*	Crawford	06/01/88	*Conrad 11852*	NEMO
	FAGACEAE				
759.1	*Quercus alba* f. *latiloba*	Sullivan	08/28/88	*Gleason 320*	NEMO
765.3	*Quercus prinoides* v. *acuminata* f. *alexanderi*	Sullivan	09/11/88	*Gleason 362*	NEMO
769.1	*Quercus X-Bushii*	Sullivan	09/18/88	*Gleason 399*	NEMO
771.3	*Quercus velutina* f. *missouriensis*	Adair	09/30/67	*Conrad 4354*	NEMO
	MORACEAE				
788.99	*Morus alba*	Howard	05/21/84	*Royall 104*	UMO
788.99	*Morus alba*	Knox	09/07/86	*Caverly & Millett 1*	NEMO
788.99	*Morus alba*	Schuyler	09/19/87	*Conrad & Millett 11351*	NEMO
792	*Humulus lupulus*	Knox	09/06/85	*Dierker 1715*	UMO/IPM
793	*Humulus japonicus*	Atchison	07/25/84	*Dierker 1309*	UMO/IPM
793	*Humulus japonicus*	Cole	08/20/84	*Raveill 2158*	MO
793	*Humulus japonicus*	Howard	08/18/85	*Royall 192*	UMO
793	*Humulus japonicus*	Perry	10/17/88	*Sims 1919*	UMO/IPM
	URTICACEAE				
794	*Urtica dioica* v. *procera*	Schuyler	04/25/87	*Conrad 10925*	NEMO
799	*Pilea pumila*	Schuyler	10/05/87	*Millett 7*	NEMO
	POLYGONACEAE				
807	*Rumex acetosella* v. *acetosella*	Carroll	05/16/88	*Taylor 1801*	UMO/IPM
811	*Rumex altissimus*	Howard	05/19/85	*Royall 154*	UMO
821	*Polygonum erectum*	Carroll	06/15/83	*Dierker 1112*	UMO/IPM
822	*Polygonum achoreum*	Grundy	06/26/85	*Dierker 1492*	UMO/IPM
823	*Polygonum aviculare* v. *aviculare*	Schuyler	09/19/87	*Conrad 11451*	NEMO

823.99	*Polygonum aviculare*	Schuyler	10/05/87	*Millett 6*	NEMO
826.2	*Polygonum coccineum*				
	v. *pratincola*	Clark	07/08/83	*Walker 505*	NEMO
829.1	*Polygonum pensylvanicum*				
	v. & f. *laevigatum*	Cole	10/06/84	*Raveill 2177*	MO
	v. & f. *laevigatum*	Schuyler	08/22/86	*Conrad 10771*	NEMO
832	*Polygonum hydropiper*	Howard	07/13/82	*Royall 17*	UMO
832.1	*Polygonum cespitosum*				
	v. *longesetum*	Cole	06/09/84	*Raveill 2044*	MO
834	*Polygonum punctatum*				
	v. *punctatum*	Sullivan	08/26/88	*Gleason 286*	NEMO
835	*Polygonum hydropiperoides*				
	v. & f. *hydropiperoides*	Sullivan	09/11/88	*Gleason 349*	NEMO
839	*Polygonum convolvulus*				
	v. *convolvulus*	Schuyler	08/22/86	*Conrad 10781*	NEMO
841	*Polygonum cuspidatum*	Adair	09/08/86	*Richardson 1646*	UMO/IPM
841	*Polygonum cuspidatum*	Saline	05/23/85	*Dierker 1391*	UMO/IPM

CHENOPODIACEAE

845	*Cycloloma atriplicifolium*	Adair	08/15/87	*Walker 2071*	NEMO
846.99	*Kochia scoparia*	Cole	10/06/84	*Raveill 2174*	MO
849.99	*Chenopodium*				
	ambrosioides	Barton	07/11/84	*Dierker 1256*	UMO/IPM
	ambrosioides	Lawrence	07/09/86	*Dierker 1559*	UMO/IPM
857	*Chenopodium*				
	gigantospermum	Cole	08/20/84	*Raveill 2151*	MO
	Chenopodium album				
860	v. *album*	Schuyler	09/19/87	*Conrad & Millett 11374*	NEMO
860.1	v. *lanceolatum*	Sullivan	08/26/88	*Gleason 293*	NEMO
869	*Monolepis nuttaliana*	Lincoln	05/12/88	*Warmund 1830*	UMO/IPM

AMARANTHACEAE

876	*Amaranthus tuberculatus*	Cole	10/06/84	*Raveill 2169*	MO
876	*Amaranthus tuberculatus*	Howard	09/13/84	*Dierker 1266*	UMO/IPM
877	*Amaranthus tamariscinus*	Audrain	08/18/83	*Dierker 1182*	UMO/IPM
877	*Amaranthus tamariscinus*	Cole	10/06/84	*Raveill 2171*	MO
877	*Amaranthus tamariscinus*	Howard	08/23/83	*Royall 80,140*	UMO
877	*Amaranthus tamariscinus*	Monroe	08/18/83	*Dierker 1184*	UMO/IPM

880	*Amaranthus spinosus*	Barton	07/11/84	*Dierker 1294*	UMO/IPM
880	*Amaranthus spinosus*	Greene	07/12/83	*Huckla 1155*	UMO/IPM
880	*Amaranthus spinosus*	Lawrence	07/09/86	*Dierker 1571*	UMO/IPM
880	*Amaranthus spinosus*	Mercer	08/19/87	*Coffin 1819*	UMO/IPM
880	*Amaranthus spinosus*	Randolph	10/01/77	*Riley 842*	UMO/IPM
883	*Amaranthus retroflexus*	Cole	10/06/84	*Raveill 2180*	MO
890	*Froelichia gracilis*	Cole	06/13/84	*Raveill 2051*	MO

PORTULACACEAE

900	*Portulaca oleracea*	Cole	06/09/84	*Raveill 2035*	MO
900	*Portulaca oleracea*	Lawrence	07/09/86	*Dierker 1689*	UMO/IPM
905.1	*Claytonia virginica* f. *robusta*	Macon	05/14/83	*Hein 34*	NEMO

CARYOPHYLLACEAE

908	*Scleranthus annuus*	Lawrence	05/13/86	*Bower 1671*	UMO/IPM
908	*Scleranthus annuus*	Oregon	05/12/88	*Minner 1809*	UMO/IPM
914	*Arenaria serpyllifolia* v. *serpyllifolia*	Monroe	07/14/84	*Raveill 2124*	DNR
914.99	*Arenaria serpyllifolia*	Boone	05/02/85	*Dierker 1501*	UMO/IPM
914.99	*Arenaria serpyllifolia*	Lawrence	04/08/86	*Dierker 1597*	UMO/IPM
914.99	*Arenaria serpyllifolia*	New Madrid	04/15/85	*Dierker 1364*	UMO/IPM
915	*Arenaria lateriflora*	Macon	05/06/83	*Hein 37*	NEMO
926	*Cerastium viscosum* f. *viscosum*	Iron	05/23/88	*Conrad 11730*	NEMO
945	*Saponaria officinalis*	Lewis	07/01/87	*Conrad 11098*	NEMO
945	*Saponaria officinalis*	Scotland	07/01/87	*Conrad 11123*	NEMO
949	*Dianthus armeria*	Howard	06/13/85	*Royall 160*	UMO
949	*Dianthus armeria*	Pike	06/12/87	*Conrad 11050*	NEMO
949	*Dianthus armeria*	Schuyler	06/08/87	*Conrad 10971*	NEMO

CERATOPHYLLACEAE

951	*Ceratophyllum demersum*	Cole	06/16/84	*Raveill 2078*	MO

NYMPHACEAE

954	*Nymphaea odorata* v. & f. *odorata*	Cole	06/16/84	*Raveill 2063*	MO

957	*Nelumbo nucifera*	Adair	07/10/87	*Conrad & Caverly 11154*	NEMO

RANUNCULACEAE

966	*Thalictrum dioicum*	Iron	05/23/88	*Conrad 11719*	NEMO
968	*Thalictrum revolutum* f. *revolutum*	Macon	06/19/83	*Hein 40*	NEMO
968.99	*Thalictrum revolutum*	Saline	06/23/83	*Dierker 1124*	UMO/IPM
971	*Delphinium ajacis*	Cole	06/09/84	*Raveill 2049*	MO
983	*Ranunculus micranthus*	Howard	04/11/85	*Royall 147*	UMO
983	*Ranunculus micranthus*	Knox	04/17/88	*Gleason 12*	NEMO
986.99	*Ranunculus sceleratus*	Cole	06/16/84	*Raveill 2058*	MO
993.99	*Ranunculus fascicularis*	Howard	04/08/86	*Royall 224*	UMO
997	*Myosurus minimus*	Knox	05/10/85	*Dierker 1504*	UMO/IPM
997	*Myosurus minimus*	Lewis	05/09/86	*Shively 1781*	UMO/IPM
997	*Myosurus minimus*	Marion	04/26/85	*Dierker 1264*	UMO/IPM
997	*Myosurus minimus*	Vernon	05/05/87	*Wojcik 1813*	UMO/IPM
1005.99	*Clematis dioscareifolia*	Cole	10/06/84	*Raveill 2165*	MO

LAURACEAE

1020.1	*Lindera benzoin* v. *pubescens*	Oregon	09/17/88	*Conrad 11993*	NEMO

PAPAVERACEAE

1026	*Papaver dubium*	Webster	05/16/85	*Dierker 1416*	UMO/IPM
1030	*Dicentra cucullaria* f. *cucullaria*	Knox	04/17/88	*Gleason 18*	NEMO

CRUCIFERAE

1039	*Brassica kaber* v. *pinnatifida*	Saline	05/31/83	*Dierker 1088*	UMO/IPM
1040	*Brassica nigra*	Cole	10/06/84	*Raveill 2167*	MO
1040	*Brassica nigra*	Pike	06/15/85	*Dierker 1498*	UMO/IPM
1048	*Conringia orientalis*	Crawford	04/16/88	*Conrad 11513*	NEMO
1049	*Lepidium campestre*	Howard	05/02/85	*Royall 152*	UMO
1050	*Lepidium perfoliatum*	Crawford	04/16/88	*Conrad 11523*	NEMO
1051.99	*Lepidium virginicum*	Howard	06/18/82	*Royall 9*	UMO
1054	*Cardaria draba*	Marion	05/09/86	*Dierker 1592*	UMO/IPM

1067	*Lesquerella filiformis*	Christian	04/26/79	*Key 2252*	SMS
1071	*Cardamine bulbosa* f. *bulbosa*	Sullivan	05/09/84	*Broyles*	NEMO
1073	*Cardamine hirsuta*	Boone	11/22/83	*Dierker 1204*	UMO/IPM
1087	*Rorippa sinuata*	Howard	05/07/82	*Dierker 980*	UMO/IPM
1088	*Rorippa sessiliflora*	Buchanan	06/09/83	*Dierker 1103*	UMO/IPM
1090.99	*Rorippa islandica*	Howard	06/01/84	*Royall 111*	UMO
1093	*Chorispora tenella*	St. Charles	04/15/87	*Kluesner 174209*	UMO/IPM
1097	*Erysimum repandum*	Howard	04/18/84	*Royall 95*	UMO
1097	*Erysimum repandum*	Pemiscot	05/06/83	*Dierker 1110*	UMO/IPM
1099.99	*Sisymbrium officinale*	Saline	05/23/85	*Dierker 1383*	UMO/IPM
1101	*Sisymbuium loeselii*	Callaway	06/13/84	*Dierker 1344*	UMO/IPM
1101	*Sisymbrium loeselii*	Howard	05/19/85	*Royall 153*	UMO
1105.1	*Descuralnia pinnata* v. *brachycarpa*	Marion	05/09/86	*Dierker 1638*	UMO/IPM
1106	*Descurainia sophia*	Chariton	06/23/88	*Yocky 1837*	UMO/IPM

CAPPARIDACEAE

1109.99	*Polanisia dodecandra* ssp. *dodecandra*	Scotland	07/27/88	*Meek 1908*	UMO/IPM

CRASSULACEAE

1114	*Sedum ternatum*	Cape Girardeau	04/27/87	*Craiglow 1812*	UMO/IPM

ROSACEAE

1146	*Pyrus communis*	Schuyler	09/19/87	*Conrad & Millett 11342*	NEMO
1167.99	*Crataegus crusgalli*	Howard	05/17/84	*Royall 98*	UMO
1187.99	*Crataegus noelensis*	Schuyler	09/22/86	*Conrad 10762*	NEMO
1207	*Duchesnea indica*	Vernon	06/02/88	*Wojcik 1805*	UMO/IPM
1209.1	*Potentilla simplex* v. *calvescens*	Sullivan	09/23/82	*Conrad 9993*	NEMO
1211.99	*Potentilla norvegica*	Callaway	05/29/85	*Dierker 1450*	UMO/IPM
1219.1	*Geum canadense* v. *camporum*	Monroe	07/14/84	*Raveill 2104*	DNR
1222.99	*Rubus occidentalis*	Howard	05/02/85	*Royall 151*	UMO
1226	*Rubus trivalis*	Camden	04/25/87	*Caverly 189*	NEMO

1227.1	*Rubus flagellaris*				
	v. & f. *occidualis*	Adair	05/16/87	*Ford*	NEMO
1228	*Rubus enslenii*	Adair	05/22/88	*Walker 117*	NEMO
1229	*Rubus invisus*	Crawford	05/17/88	*Conrad 11631*	REIS
1232	*Rubus orarius*	Adair	05/16/87	*Ford*	NEMO
1242	*Rosa multiflora*	Lincoln	05/27/84	*Schuette 495*	DNR
1242	*Rosa multiflora*	Schuyler	06/08/87	*Conrad 10993*	NEMO
1251.1	*Rosa carolina*				
	v. *carolina* f. *glandulosa*	Schuyler	06/08/87	*Conrad 10961*	NEMO
1258	*Prunus mexicana*	Howard	04/03/86	*Royall 222*	UMO
1261	*Prunus munsoniana*	Howard	04/06/86	*Royall 223*	UMO
1266	*Prunus serotina*	Wright	07/20/88	*Rippee 1848*	UMO/IPM

LEGUMINOSAE

1269	*Desmanthus illinoensis*	Howard	08/01/85	*Royall 188*	UMO
1269	*Desmanthus illinoensis*	Putnam	09/05/84	*Unknown*	NEMO
1287.99	*Crotalaria sagittalis*	Howard	07/21/84	*Royall 122*	UMO
1289	*Trifolium pratense*				
	v. & f. *pratense*	Schuyler	09/19/87	*Conrad & Millett 11384*	NEMO
1289.1	*Trifolium pratense*				
	v. *pratense*				
1289.1	f. *leucochraceum*	Adair	08/22/82	*Walker 165*	NEMO
	f. *leucochraceum*	Sullivan	09/12/87	*Conrad & Gronefeld 11290*	NEMO
1294.99	*Trifolium hybridum*	Cole	06/16/84	*Raveill 2072*	MO
1299	*Trifolium campestre*	Chariton	06/12/85	*Miller 1454*	UMO/IPM
1302.1	*Medicago lupulina*				
	v. *glandulosa*	Harrison	08/07/86	*Jones 1562*	UMO/IPM
1302.99	*Medicago lupulina*	Reynolds	05/04/84	*Raveill 2030*	DNR
1302.99	*Medicago lupulina*	Howard	05/22/85	*Royall 155*	UMO
1308	*Lotus corniculatus*	Audrain	07/01/87	*Conrad 11145*	NEMO
1308	*Lotus corniculatus*	Clark	07/01/87	*Conrad 11120*	NEMO
1308	*Lotus corniculatus*	Davies	06/01/87	*Delozier 1136-B*	NEMO
1308	*Lotus corniculatus*	Knox	07/01/87	*Conrad 11087*	NEMO
1308	*Lotus corniculatus*	Lewis	07/01/87	*Conrad 11089*	NEMO
1308	*Lotus corniculatus*	Macon	06/12/87	*Conrad 11056*	NEMO
1308	*Lotus corniculatus*	Marian	07/07/87	*Conrad 11148*	NEMO
1308	*Lotus corniculatus*	Putnam	09/12/87	*Conrad 11286*	NEMO
1308	*Lotus corniculatus*	Scotland	07/01/87	*Conrad 11122*	NEMO
1308	*Lotus corniculatus*	Shelby	07/07/87	*Conrad 11149*	NEMO

1322.3	*Amorpha fruticosa* v. *angustifolia*	Schuyler	08/22/86	*Conrad 10792*	NEMO
1323.1	*Tephrosia virginiana* v. *holosericea*	Crawford	06/01/88	*Conrad 11848*	REIS
1331	*Astragalus caryocarpus*	Macon	04/27/83	*Hein 32*	NEMO
1335	*Coronilla varia*	Clark	07/01/87	*Conrad 11121*	NEMO
1335	*Coronilla varia*	Lewis	07/01/87	*Conrad 11090*	NEMO
1341.99	*Desmodium canescens*	Carroll	08/17/82	*Dierker 829*	UMO/IPM
1364	*Lespedeza capitata* v. *capitata*	Clark	07/01/87	*Conrad 11104*	NEMO
1366	*Lespedeza cuneata*	Barton	07/11/84	*Dierker 1303*	UMO/IPM
1366	*Lespedeza cuneata*	Oregon	09/17/88	*Conrad 11995*	NEMO
1368	*Lespedeza stipulacea*	Cole	10/06/85	*Raveill 2186*	MO
1372.99	*Vicia sativa*	Pemiscot	05/12/83	*Dierker 1036*	UMO/IPM
1374	*Vicia hirsuta*	Dunklin	05/09/85	*Raveill 2306*	MO
1378.99	*Vicia villosa*	Mississippi	07/12/77	*Berkebile 948*	UMO/IPM
1395	*Atrophostyles leiosperma*	Audrain	07/23/86	*Dierker 1395*	UMO/IPM
1395	*Strophostyles leiosperma*	Howard	08/20/82	*Royall 26*	UMO
1401	*Rhynchosia latifolia*	Crawford	05/20/88	*Conrad & Callaci 11700*	NEMO

OXALIDACEAE

1408.2	*Oxalis violacea* v. *tricophora*	Camden	04/25/87	*Caverly 180*	NEMO
1410	*Oxalis dillenii* ssp. *dillenii*	Cole	06/16/84	*Raveill 2059*	MO
	ssp. *dillenii*	Crawford	05/17/88	*Conrad 11630*	NEMO
	ssp. *dillenii*	Reynolds	05/04/84	*Raveill 2031*	DNR
1410	ssp. *dillenii*	Schuyler	09/19/87	*Conrad & Millett 11425*	NEMO

GERANIACEAE

1413	*Geranium carolinianum* v. *carolinianum*	Crawford	05/19/88	*Conrad 11678*	NEMO
1413.99	*Geranium carolinianum*	Lincoln	06/08/84	*Schuette 542*	DNR
1415	*Geranium pusillun*	Cole	06/09/84	*Raveill 2052*	MO

ZYGOPHYLLACEAE

1418	*Tribulus terrestris*	Howard	07/16/85	*Royall 176*	UMO

1418	*Tribulus terrestris*	Mississippi	07/19/77	*Berkebile 946*	UMO/IPM
	SIMAROUBACEAE				
1423	*Ailanthus altissima*	Howard	11/04/85	*Royall 216*	UMO
	EUPHORBIACEAE				
1433	*Croton monanthogynus*	Shannon	09/03/86	*Wester 1650*	UMO/IPM
1437	*Acalypha ostryaefolia*	Callaway	07/26/83	*LaBarge 1175*	UMO/IPM
1437	*Acalypha ostryaefolia*	Cole	08/20/84	*Raveill 2155*	MO
1437	*Acalypha ostryaefolia*	Franklin	08/12/85	*Dierker 1616*	UMO/IPM
1437	*Acalypha ostryaefolia*	Holt	08/03/86	*Williams 1565*	UMO/IPM
1444	*Euphorbia dentata* f. *dentata*	Schuyler	08/22/86	*Conrad 10802*	NEMO
	Euphorbia dentata f. *dentata*	Sullivan	09/11/88	*Gleason 350*	NEMO
1444.1	*Euphorbia dentata* f. *cuphosperma*	Schuyler	09/19/87	*Conrad 11460*	NEMO
1444.99	*Euphorbia dentata*	Dunklin	06/29/88	*Sims 1832*	UMO/IPM
1444.99	*Euphorbia dentata*	Howard	07/20/85	*Royall 182*	UMO
1447	*Euphorbia obtusata*	Cole	06/16/84	*Raveill 2074*	MO
1453.1	*Euphorbia corollata* v. *mollis*	Shannon	05/26/88	*Conrad 11789*	REIS
1456	*Euphorbia serpens*	Howard	08/26/88	*Dierker 1911*	UMO/IPM
1457	*Euphorbia maculata*	Jefferson	09/08/86	*Wilson 1684*	UMO/IPM
1461	*Euphorbia prostrata*	Boone	10/03/84	*Dierker 1327*	UMO/IPM
1461	*Euphorbia prostrata*	Monroe	07/14/84	*Raveill 2125*	DNR
	CELASTRACEAE				
1477	*Euonymus atropurpureus*	Howard	06/13/85	*Royall 158*	UMO
	HIPPOCASTANACEAE				
1487	*Aesculus glabra* v. & f. *glabra*	Knox	09/06/86	*Caverly & Millett 6*	NEMO
	SAPINDACEAE				
1490	*Sapindus drummondii*	Randolph	10/03/88	*Westhues*	NEMO

RHAMNACEAE

1497.99	*Rhamnus caroliniana*	Dallas	07/28/85	*Ingram 1617*	UMO/IPM
1497.99	*Rhamnus caroliniana*	Greene	10/04/88	*Anderson 1916*	UMO/IPM

MALVACEAE

1518	*Malva neglecta*	Crawford	05/23/88	*Conrad 1701*	NEMO
1522.99	*Callirhoe involucrata*	Atchison	06/08/88	*Chapple 1806*	UMO/IPM
1522.99	*Callirhoe involucrata*	Benton	06/24/86	*Hubbard 1847*	UMO/IPM
1527	*Sida spinosa*	Cole	08/20/84	*Raveill 2161*	MO
1527	*Sida spinosa*	Mississippi	06/29/77	*Berkebile 947*	UMO/IPM
1529.99	*Anoda cristata*	Chariton	07/31/87	*Schmidt 1788*	UMO/IPM
1529.99	*Anoda cristata*	Lafayette	11/06/85	*Bentlage 1631*	UMO/IPM
1529.99	*Anoda cristata*	New Madrid	08/22/84	*Dierker 1368*	UMO/IPM
1529.99	*Anoda cristata*	Newton	10/02/85	*Shank 1633*	UMO/IPM
1529.99	*Anoda cristata*	Saline	06/13/85	*Alexander 1467*	UMO/IPM
1530	*Abutilon theophrasti*	Cole	10/06/84	*Raveill 2166*	MO
1534	*Hibiscus trionum*	Schuyler	09/19/87	*Conrad 11462*	NEMO
1534	*Hibiscus trionum*	Vernon	10/30/86	*Mason 1785*	UMO/IPM

HYPERICACEAE

1538.1	*Hypericum punctatum* v. *punctatum* f. *subpetiolatum*	Randolph	05/20/81	*Conrad & Perry 9166*	NEMO

CISTACEAE

1552	*Helianthemum bicknellii*	Atchison	06/18/85	*Raveill 2317*	MO

VIOLACEAE

1557	*Viola pedata* v. *pedata*	Schuyler	04/25/87	*Conrad 10910*	NEMO
1557.1	v. *pedata* & f. *lineariloba*	Schuyler	04/25/87	*Conrad 10911*	NEMO
1560.99	*Viola missouriensis*	Schuyler	04/25/87	*Conrad 10923*	NEMO
1561	*Viola sororia* f. *sororia*	Macon	04/27/83	*Hein 31*	NEMO
1563	*Viola triloba* f. *triloba*	Camden	04/19/86	*Caverly 160*	NEMO

PASSIFLORACEAE

1573	*Passiflora incarnata*	Cole	08/20/84	*Raveill 2149*	MO
1573	*Passiflora incarnata*	Howell	11/01/85	*Proffitt 1624*	UMO/IPM

LYTHRACEAE

1581	*Ammannia auriculata*	Carroll	07/20/82	*Dierker 992*	UMO/IPM
1581	*Ammannia auriculata*	Saline	07/27/84	*Dierker 1365*	UMO/IPM
1585.99	*Lythrum salicaria*	Boone	07/24/85	*Dierker 1542*	UMO/IPM

ONAGRACEAE

1591	*Jussiaea repens* v. *glabrescens*	Cole	06/16/84	*Raveill 2080*	MO
1602.3	*Oenothera biennis* v. *hirsutissima*	Schuyler	09/19/87	*Conrad & Millett 11444*	NEMO
1605.99	*Oenothera laciniata*	Barton	05/24/84	*Dierker 1407*	UMO/IPM
1608	*Oenothera linifolia*	Webster	05/16/85	*Dierker 1384*	UMO/IPM
1617.99	*Gaura parviflora*	Howard	06/30/85	*Royall 168*	UMO

UMBELLIFERAE

1631	*Sanicula gregaria*	Crawford	05/20/88	*Conrad & Callaci 11685*	REIS
1645	*Erigenia bulbosa*	Howard	04/03/86	*Royall 221*	UMO
1646	*Conium maculatum*	Audrain	06/06/84	*Dierker 1337*	UMO/IPM
1646	*Conium maculatum*	Wright	05/13/86	*Dierker 1717*	UMO/IPM
1648	*Spermolepis inermis*	Cole	06/09/84	*Raveill 2041*	MO
1654.99	*Cicuta maculata*	Howard	07/20/82	*Royall 21*	UMO
1670.1	*Thaspium trifoliatum* v. *flavum*	Crawford	05/20/88	*Conrad & Callaci 11684*	REIS
1677	*Pastinaca sativa*	Lewis	07/01/87	*Conrad 11094*	NEMO
1677	*Pastinaca sativa*	Wright	05/13/86	*Dierker 1583*	UMO/IPM
1680	*Daucus pusillus*	Howard	07/07/85	*Royall 172*	UMO

CORNACEAE

1684	*Cornus obliqua*	Chariton	08/03/79	*Dierker 748*	UMO/IPM

1685	*Cornus racemosa*	Lafayette	06/17/83	*Dierker 1118*	UMO/IPM
		OLEACEAE			
1717	*Fraxinus pennsylvanica* v. *pennsylvanica*	Schuyler	04/25/87	*Conrad 10924*	NEMO
		GENTIANACEAE			
1729	*Sabatia campestris*	Barry	07/15/83	*Mitchell 80*	DNR
		ASCLEPIADACEAE			
1752.1	*Asclepias viridiflora* v. *lanceolata*	Monroe	07/14/84	*Raveill 2129*	DNR
1755	*Asclepias incarnata* v. & f. *incarnata*	Schuyler	08/22/86	*Conrad 10799*	NEMO
	v. & f. *incarnata*	Sullivan	09/12/87	*Conrad & Gronefeld 11294*	NEMO
		CONVOLVULACEAE			
1775.99	*Ipomoea hederacea*	Howard	08/30/85	*Royall 196*	UMO
1776	*Ipomoea purpurea*	Buchanan	07/26/84	*Dierker 1279*	UMO/IPM
1776	*Ipomoea purpurea*	Howard	09/10/85	*Royall 201*	UMO
1780.2	*Convolvulus sepium* v. *sepium* f. *malacophyllus*	Crawford	06/02/88	*Conrad & Aspinwall 11868*	NEMO
1782	*Convolvulus arvensis* f. *arvensis*	Sullivan	09/11/88	*Gleason 346*	NEMO
1784	*Cuscuta glomerata*	Gentry	08/15/88	*Bracken 1918*	UMO/IPM
1787	*Cuscuta campestris*	Audrain	06/20/86	*Schnarre 1661*	UMO/IPM
1787	*Cuscuta campestris*	Howard	09/13/84	*Dierker 1360*	UMO/IPM
1787	*Cuscuta campestris*	Lafayette	07/03/85	*Dierker 1511*	UMO/IPM
1787	*Cuscuta campestris*	Macon	08/27/87	*Dierker 1822*	UMO/IPM
1787	*Cuscuta campestris*	Saline	08/12/83	*Dierker 1195*	UMO/IPM
1791	*Cuscuta polygonorum*	Lincoln	09/26/84	*Schuette 774*	DNR
		POLOMONIACEAE			
1795	*Phlox bifida* v. *bifida*	Boone	04/18/85	*Raveill 2299*	MO

BORAGINACEAE

1823	*Lithospermum arvense*	Pemiscot	05/06/83	*Dierker 1020*	UMO/IPM
1836	*Mertensia virginica* f. *virginica*	Macon	04/27/83	*Hein 33*	NEMO

VERBENACEAE

1841.99	*Verbena hastata*	Howard	06/30/85	*Royall 167*	UMO
1844	*Verbena bracteata*	Randolph	06/09/77	*Sanders*	NEMO
1845.99	*Verbena canadensis*	Adair	09/27/87	*Conrad 11469*	NEMO

LABIATAE

1858.1	*Scutellaria lateriflora* f. *albiflora*	Shannon	05/26/88	*Conrad & Franklin 11763*	REIS
1866	*Nepeta cataria*	Cole	08/20/84	*Raveill 2162*	MO
1867.99	*Glechoma hederacea*	Chariton	08/06/82	*Plymell 824*	UMO/IPM
1869.1	*Prunella vulgaris* v. & f. *lanceolata*	Lewis	09/05/81	*Hopkins 100*	NEMO
1878	*Lamium purpureum*	Howard	04/28/86	*Royall 227*	UMO
1894	*Blephilia hirsuta* v. *hirsuta*	Macon	06/19/83	*Hein 42*	NEMO
1908.99	*Lycopus americanus*	Howard	07/22/85	*Royall 184*	UMO

SOLANACEAE

1921	*Solanum americanum*	Adair	08/31/88	*Gleason 343*	NEMO
1921	*Solanum americanum*	Atchison	10/15/82	*Dierker 803*	UMO/IPM
1921	*Solanum americanum*	Howard	06/30/85	*Royall 169*	UMO
1923	*Solanum sarachoides*	Boone	07/02/86	*Dierker 1659*	UMO/IPM
1931	*Physalis heterophylla* v. *heterophylla*	Iron	05/23/88	*Conrad 11718*	NEMO
1933	*Physalis longifolia* v. & f. *longifolia*	Schuyler	09/19/87	*Conrad & Millett 11431*	NEMO
1933.1	v. & f. *subglabrata*	Madison	08/26/85	*Long 1674*	UMO/IPM
1939	*Lycium halimifolium*	Howard	08/01/85	*Royall 186*	UMO

SCROPHULARIACEAE

1951.99	*Gratiola neglecta*	Cole	06/16/84	*Raveill 2061*	MO

1961	*Verbascum blattaria* f. *blattaria*	Adair	06/01/70	*Conrad 5637*	NEMO
1961.1	f. *erubescens*	Shannon	05/26/88	*Conrad 11788*	REIS
1989	*Veronica polita*	Atchison	06/27/85	*Dierker 1509*	UMO/IPM
1989	*Veronica polita*	Buchanan	06/09/83	*Dierker 1069*	UMO/IPM
1989	*Veronica polita*	Cole	04/07/84	*Raveill 2023*	MO
1989	*Veronica polita*	Lawrence	05/13/86	*Dierker 1584*	UMO/IPM
1989	*Veronica polita*	Reynolds	05/04/84	*Raveill 2032*	DNR

BIGNONIACEAE

2012	*Catalpa speciosa*	Schuyler	09/19/87	*Conrad & Millett 11339*	NEMO

MARTYNIACEAE

2014	*Proboscidea louisianica*	Audrain	08/12/88	*Prior 1903*	UMO/IPM
2014	*Proboscidea louisianica*	Holt	08/24/86	*Flanary 1778*	UMO/IPM
2014	*Proboscidea louisianica*	Miller	09/13/88	*Dowdy 1915*	UMO/IPM

OROBANCHACEAE

2015	*Orobanche uniflora*	Shannon	05/26/88	*Aspinwall*	REIS

ACANTHACEAE

2021.2	*Ruellia humilis* v. *frondosa*	Sullivan	09/12/87	*Conrad & Gronefeld 11291*	NEMO
2021.3	*Ruellia humilis* v. & f. *longiflora*	Sullivan	08/26/88	*Gleason 294*	NEMO

PLANTAGINACEAE

2026	*Plantago cordata*	Shannon	05/26/88	*Aspinwall*	REIS
2030	*Plantago aristata*	Howard	07/05/84	*Royall 119*	UMO

RUBIACEAE

2048.09	*Galium pedemontanum*	Cedar	05/10/84	*Hubbard 1242*	UMO/IPM
	Galium pedemontanum	Lawrence	04/08/86	*Dierker 1637*	UMO/IPM
	Galium pedemontanum	Texas	05/13/88	*Jennings 1808*	UMO/IPM

	Galium pedemontanum	Webster	05/16/84	*Dierker 1426*	UMO/IPM
2051	*Diodia teres* v. *teres*	Sullivan	09/18/88	*Gleason 387*	NEMO
2051.99	*Diodia teres*	Howard	08/11/83	*LaBarge 1170*	UMO/IPM
		CAPRIFOLIACEAE			
2066.99	*Lonicera dioica*	Lincoln	07/09/84	*Schuette 599*	DNR
2081.2	*Sambucus canadensis* v. *submollis*	Schuyler	06/08/87	*Conrad 11019*	NEMO
		DIPSACACEAE			
2088.99	*Dipsacus sylvestris*	Bates	07/28/83	*Dierker 1209*	UMO/IPM
2088.99	*Dipsacus sylvestris*	Callaway	07/27/83	*Dierker 1172*	UMO/IPM
2088.99	*Dipsacus sylvestris*	Ozark	07/02/85	*Hambelton 1546*	UMO/IPM
2088.09	*Dipsacus laciniatus*	Caldwell	07/29/83	*Dierker 1214*	UMO/IPM
	Dipsacus laciniatus	Callaway	07/17/84	*Dierker 1275*	UMO/IPM
	Dipsacus laciniatus	Clark	02/28/84	*Dierker 1223*	UMO/IPM
	Dipsacus laciniatus	Cooper	07/18/84	*Dierker 1350*	UMO/IPM
	Dipsacus laciniatus	Dekalb	07/29/83	*Dierker 1212*	UMO/IPM
	Dipsacus laciniatus	Howard	08/01/83	*Dierker 1208*	UMO/IPM
	Dipsacus laciniatus	Johnson	09/11/85	*Philbrick 1634*	UMO/IPM
	Dipsacus laciniatus	Linn	07/25/84	*Dierker 1311*	UMO/IPM
	Dipsacus laciniatus	Livingston	07/29/83	*Dierker 1215*	UMO/IPM
	Dipsacus laciniatus	Macon	07/25/84	*Dierker 1312*	UMO/IPM
	Dipsacus laciniatus	Marion	08/08/85	*Dierker 1618*	UMO/IPM
	Dipsacus laciniatus	Montgomery	07/25/84	*Dierker 1404*	UMO/IPM
	Dipsacus laciniatus	Pike	07/20/84	*McDonald 1797*	UMO/IPM
	Dipsacus laciniatus	Ralls	07/03/83	*Dierker 1132*	UMO/IPM
	Dipsacus laciniatus	Randolph	07/25/84	*Dierker 1313*	UMO/IPM
	Dipsacus laciniatus	Shelby	07/17/86	*Dierker 1558*	UMO/IPM
		CUCURBITACEAE			
2097	*Sicyos angulatus*	Callaway	06/29/84	*Gentry 1341*	UMO/IPM
		COMPOSITAE			
2125.2	*Eupatorium rugosum* v. *tomentellum*	Harrison	09/12/82	*Conrad 9906*	NEMO
2140.99	*Grindelia squarrosa*	Adair	09/24/87	*Dimit*	NEMO
2141.99	*Grindelia lanceolata*	Howard	10/12/84	*Royall 141*	UMO

2163.1	*Solidago altissima*	Schuyler	09/12/87	*Conrad 9875*	NEMO
2163.1	*Solidago altissima*	Sullivan	09/12/87	*Conrad & Gronefeld 11301*	NEMO
2165	*Solidago rigida* v. *rigida*	Gentry	09/12/82	*Conrad 9879*	NEMO
2168	*gymnospermoides*	Schuyler	09/19/87	*Conrad & Millett 11386*	NEMO
	gymnospermoides	Sullivan	09/23/82	*Conrad & Anderson 10033*	NEMO
2178	*Aster azureus* v. & f. *azureus*	Schuyler	09/19/87	*Conrad & Anderson 10033*	NEMO
2178.1	*Aster azureus* v. *azureus* f. *laevicaulis*	Adair	09/27/87	*Conrad 11464*	NEMO
2181	*Aster drummondii*	Sullivan	09/12/87	*Conrad & Gronefeld 11335*	NEMO
2184	*Aster novae-angliae* f. *novae-angliae*	Schuyler	09/19/87	*Conrad & Millett 11463*	NEMO
2188	*Aster turbinellus*	Schuyler	10/05/87	*Millett 27*	NEMO
2189	*Aster pilosus* v. & f. *pilosus*	Harrison	09/12/82	*Conrad 9903*	NEMO
2189.99	*Aster pilosus*	Howard	09/29/82	*Royall 40*	UMO
2198.1	*Aster praealtus* v. *angustior*	Sullivan	09/23/82	*Conrad & Anderson 10009*	NEMO
2206	*Erigeron philadelphicus* f. *philadelphicus*	Crawford	05/20/88	*Conrad & Callaci 11693*	REIS
2207	*Erigeron annuus* f. *annuus*	Lewis	07/01/87	*Conrad 11095*	NEMO
2208.2	*Erigeron strigosus* v. *beyrichii*	Schuyler	06/08/87	*Conrad 10981*	NEMO
2208.99	*Erigeron strigosus*	Clark	07/01/87	*Conrad 11107*	NEMO
2225.1	*Ambrosia artemisiifolia* v. *elatior* f. *villosa*	Schuyler	09/19/87	*Conrad & Millett 11395*	NEMO
	v. *elatior* f. *villosa*	Sullivan	09/11/88	*Gleason 356*	NEMO
2243.99	*Silphium laciniatum*	Douglas	07/02/87	*Morris 1816*	UMO/IPM
2265	*Ratibida pinnata*	Howard	07/07/85	*Royall 173*	YUMO
2282	*Helianthus decapetalus*	Iron	05/23/88	*Conrad 11715*	NEMO
2283.1	*Helianthus tuberosus* v. *subcanescens*	Schuyler	09/19/87	*Conrad & Millett 11357*	NEMO

2286	*Verbesina helianthoides*	Lincoln	06/24/84	*Schuette 583*	DNR
2291.99	*Coreopsis tinctoria*	Scott	05/12/83	*Dierker 1040*	UMO/IPM
2292.99	*Coreopsis grandiflora*	Johnson	06/14/83	*Delozier 1157*	NEMO
2296.1	*Coreopsis tripteris* v. *deamii*	Schuyler	09/19/87	*Conrad & Millett 11446*	NEMO
2298.99	*Bidens cernua*	Howard	09/23/84	*Royall 139*	UMO
2302.99	*Bidens frondosa*	Howard	09/13/83	*Royall 149*	UMO
2304.2	*Bidens aristosa* v. *mutica*	Schuyler	09/19/87	*Conrad & Millett 11399*	NEMO
2304.99	*Bidens aristosa*	Howard	09/09/83	*Royall 91*	UMO
2312	*Galinsoga ciliata*	Cape Girardeau	07/24/85	*Dierker 1545*	UMO/IPM
2312	*Galinsoga ciliata*	Dent	09/20/85	*Pickle 1611*	UMO/IPM
2326	*Anthemis cotula*	Buchanan	07/26/84	*Dierker 1278*	UMO/IPM
2328.99	*Matricaria chamomilla*	Scott	05/12/83	*Dierker 1038*	UMO/IPM
2329	*Matricaria matricarioides*	Audrain	06/06/84	*Dierker 1336*	UMO/IPM
2329	*Matricaria matricarioides*	Cole	06/09/84	*Raveill 2050*	MO
2329	*Matricaria matricarioides*	Crawford	05/23/88	*Conrad 11749*	NEMO
2329	*Matricaria matricarioides*	Lincoln	06/29/83	*Schuette 141*	DNR
2329	*Matricaria matricarioides*	New Madrid	05/12/83	*Dierker 1039*	UMO/IPM
2330.1	*Chrysanthemum leucanthemum* v. & f. *pinnatifidum*	Sullivan	08/28/88	*Gleason 325*	NEMO
2330.99	*leucanthemum*	Howard	06/13/85	*Royall 159*	UMO
	leucanthemum	Lincoln	05/30/83	*Schuette 90*	DNR
2337	*Artemisia annua*	Miller	07/09/88	*George 1839*	UMO/IPM
2338.99	*Artemisia vulgaris*	Boone	09/06/84	*Dierker 170651*	UMO/IPM
2341.99	*Erechtites hieracifolia*	Audrain	09/14/87	*Schnarre 1828*	UMO/IPM
2350.1	*Senecio aureus* v. *intercursus*	Iron	05/23/88	*Conrad 11720*	NEMO
2350.2	v. *gracilis*	Adair	05/20/81	*Walker 105*	NEMO
	v. *gracilis*	Iron	05/23/88	*Conrad 11717*	NEMO
2358	*Cirsium discolor* f. *discolor*	Schuyler	08/22/86	*Conrad 10765*	NEMO
	f. *discolor*	Sullivan	08/26/88	*Gleason 299*	NEMO
2358.99	*Cirsium discolor*	Gentry	09/12/82	*Conrad 9892*	NEMO
2362.99	*Cirsium arvense*	Buchanan	08/12/83	*Jarman 1180*	UMO/IPM
2362.99	*Cirsium arvense*	Callaway	06/12/85	*Bellinghausen 1470*	UMO/IPM
2362.99	*Cirsium arvense*	Cedar	10/04/83	*Hubbard 1198*	UMO/IPM
2362.99	*Cirsium arvense*	Marion	05/20/85	*Dierker 1380*	UMO/IPM

2362.99	*Cirsium arvense*	Nodaway	06/26/86	*Wynn 1657*	UMO/IPM
2370	*Centaurea maculosa*	Lawrence	06/04/85	*Hubbard 1516*	UMO/IPM
2370	*Centaurea maculosa*	Pike	06/30/85	*Dierker 1491*	UMO/IPM
2376	*Krigia virginica*	Pemiscot	05/06/83	*Dierker 1025*	UMO/IPM
2382	*Tragopogon dubius*	Clark	07/01/87	*Conrad 11114*	NEMO
2382	*Tragopogon dubius*	Saline	05/31/83	*Dierker 1087*	UMO/IPM
2383	*Tragopogon pratensis*	Cole	07/09/85	*Smedley 1722*	UMO/IPM
2385	*Taraxacum officinale*	Knox	04/17/88	*Gleason 10*	NEMO
	Taraxacum officinale	Schuyler	04/25/87	*Conrad 10920*	NEMO
	Taraxacum officinale	Sullivan	09/12/87	*Conrad & Gronefeld 11287*	NEMO
2387	*Sonchus oleraceus*	Howard	09/07/85	*Royall 200*	UMO
2388.99	*Sonchus asper*	Cole	06/09/84	*Raveill 2036*	MO
2388.99	*Sonchus asper*	Harrison	06/24/86	*Killpack 1845*	UMO/IPM
2388.99	*Sonchus asper*	Lawrence	07/09/86	*Dierker 1568*	UMO/IPM
2388.99	*Sonchus asper*	Livingstone	07/01/86	*McVickers 1658*	UMO/IPM
2391.4	*Lactuca canadensis* v. & f. *longifolia*	Gentry	09/12/82	*Conrad 9888*	NEMO
2395	*Lactuca floridana* v. & f. *floridana*	Randolph	08/03/79	*Conrad 8370*	NEMO
	v. & f. *floridana*	Schuyler	08/22/86	*Conrad 10787*	NEMO
2371.09	*Centaurea diffusa*	Howard	06/24/86	*Slater 1667*	UMO/IPM